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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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08/22/2003

Xiao-Fan Feng

SLA1222

8258

52894

7590

11/17/2009

KRIEGER INTELLECTUAL PROPERTY, INC.

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EXAMINER

KAU, STEVEN Y

ART UNIT

PAPER NUMBER

2625

NOTIFICATION DATE

DELIVERY MODE

11/17/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KRIEGERIP@COMCAST.NET

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/645,952	FENG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	STEVEN KAU	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 and 19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 is/are allowed.
- 6) ☒ Claim(s) 14-18, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Acknowledgement***

1. Applicant's amendment was received on 7/23/2009, and has been entered and made of record.

### ***Status of the Claims***

2. Claims 1 to 13, and 19 have been withdrawn by the applicant, and claims 14 to 18, and 20 to 22 are now pending for further examination in this Action.

### ***Response to Remark/Arguments***

3. Applicant's arguments with respect to claims 14 to 18, and 20 to 22 have been fully considered and the reply to the Remarks/Arguments is in the following:

- Applicant filed a Terminal Disclaimer on 6/25/2008 to overcome the provisional double patenting rejection. Thus, the provisional double patenting rejection is withdrawn from the record.
- Applicant's arguments, "Applicant now amends this term back to the original term "designator"", Page 11, Remarks, 7/23/2009 has been fully considered. Thus, Claim 21 Rejections Under 35 U.S.C. § 112, first paragraph is withdrawn from the record.

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- Claims 14-18, 20 and 22 were rejected under 35 U.S.C. 101 for lack of 101 statutory utilities, i.e. a machine. Claims 14-18, 20 and 22 have been amended to include “is performed by a computing device comprising a processor and a memory”. Thus, a process step of the method claims 14-18 and 20 is tied to a 101 statutory device. Therefore, Claims 14-18 and 20 rejections under 35 USC 101 are withdrawn from the record. However, Claim 22, a computer-readable medium claim, does not meet the 35 USC 101 requirements. A computer-readable medium, for example, can be a signal, i.e. a print command, which can be performed by a computing device. However, a signal is a form of energy and therefore does not meet the 35 USC 101 statutory requirements. “A computer-readable medium” must be defined specifically to a statutory device, which is a physical, or a tangible thing. For example, “a computer-readable storage medium” is considered a physical or tangible thing in meeting the 35 USC 101 requirements if “a computer-readable storage medium” is defined in the specification that the “storage medium” is a physical storage device, i.e. a hard drive, a disk, etc., and not a waveform which can be transmitted in a network, or in the air. Since “a computer-readable medium” in Claim 22 is not defined in the original specification, a broadest reasonable interpretation is given, i.e. a signal. Thus, Claim 22 rejection under 35 USC 101 is proper and is maintained.
- Claim 20 is allowable subject matter.

- Applicant's arguments with respect to the rejection of claims 14-18, and 21-22 under 35 U.S.C. 102(e) and 103(a) have been fully considered but are not persuasive. The following explains the examiner's position.

Applicant's arguments, "The rejection is improper as it fails to present a prima facie case of anticipation. Daly does not disclose a method for creating a dither pattern in which dither pattern pixel values are dispersed from values in other color channels or image description channels".

In re, the Examiner respectfully disagrees with the conclusion. The invention as a whole in Daly's disclosure, US 2003/0164961 discloses "a method for creating a dither pattern in which dither pattern pixel values are dispersed from values in other color channels or image description channels". For instance, Figures 4 & 5 disclose a system using human visual noise for spatiotemporal dithering, where a dither pattern is created and dither pattern pixel values are dispersed in color channels. For example, Red Quantizer 16a, Green Quantizer 16b, and Blue Quantizer 16c. In addition, Paragraphs [0052], to [0055] clear describe the process of creating a dither pattern to disperse dither pattern pixel values in color channels. Thus, applicant's argument is not persuasive to the examiner.

Applicant continue to argue, "In repeating this rejection, the examiner does not seem to understand that the presently claimed invention relates to the creation of

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specific dither patterns and the placement of specific pixel values within those patterns.

The examiner continues to cite art related to the placement of dither patterns as they are applied to an image and art that does not relate to the placement of individual pixel values within a dither pattern. Other art is cited in which the pixel values in a dither pattern are not dependent on pixel values in a dither pattern of another color channel.

The present invention relates to creation of patterns of pixel values, which are dependent on patterns in other color channels, while the cited art relates to the application of established dither patterns or the creation of dither patterns that do not have cross-color-channel dependence."

In re, the examiner respectfully disagrees with the argument. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited references are reasonably and properly meeting the claimed limitations. For example, Claim 14 is an independent claim, and limitations recite, "a. establishing a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets, each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels; and b. designating pixel values in said dither pattern tiles wherein subsequently- designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels, wherein said designating is performed by a computing device comprising a processor and a memory." The two process steps of the method claim 14 are taught by Daly '961 as discussed in the previous Action. For instance, Daly discloses a. establishing a spatio-

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temporal array of dither pattern tiles (**referring to Fig. 8, disclose an embodiment of the spatiotemporal array of dither values tiled across the image sequence**) comprising a plurality of temporal framesets (**Fig. 8 discloses spatio-temporal array of dither pattern tiles comprising multiple temporal framesets, Para. 58**), each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels (**Figs. 4 and 5, discloses color channels for said framesets, i.e., “one embodiment generates two independent spatiotemporal arrays. These are applied to the opponent color signals and transformed via a matrix from having an achromatic, and two chromatic signals into a 3-channel RGB signal”; Paras. 53-54**); and

b. designating pixel values in said dither pattern tiles (i.e. **“The spatial array is tiled across the image as needed, and the different frames of the dither are stepped through in sync with the image's frames”, such frames 0-n in Frameset P each designating pixel values, Figs. 5 and 8**) wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels (**in Paragraph 58, Daly discloses, “In one embodiment of the present invention, the spatiotemporal array of dither values may be tiled across the image sequence to be displayed. The dither array is smaller than the image array in order to save memory costs, so it must be tiled both spatially and temporally across the image sequence. The preferred way it to step through the frames of the dither array spatially across the image in a repeating manner, either horizontally and vertically, or horizontally,**

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**with increment steps at the start-of-row repeat positions or some other index position. This is shown in frame p, 40, and Frame p+1, 42, of FIG. 8. This is intended to avoid the formation of periodic patterns via repeats of the same dither tile frame in a single image frame. Such periodic patterns can be more detectable than the pattern in a single tile. This method further reduces the visibility of the spatiotemporal dither array”; that is, the dither array is tiled both spatially and temporally to step through the frames across the image in a repeat manner, or** “subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels” **since “transformed via a matrix from having an achromatic, and two chromatic signals into a 3-channel RGB signal”, Pars. 53 & 54), wherein said designating is performed by a computing device comprising a processor and a memory (referring to Figs. 4 & 5, a display system for spatiotemporal dithering includes multiple process modules, i.e. image data is divided into RGB channels, and memory 30 for storing tiles; that is, there must be a processor, or a CPU controlling the process for performing spatiotemporal dithering; Pars. 54 & 55).** Thus, a prima facie case of anticipation is clearly well established.

Applicant continue to argue, “Daly shows, in conjunction with Figures 3-5, that different dither pattern tiles may be used for each color channel, but does not disclose a method whereby the dither patterns in the tiles are created with feedback related to pixel values in the dither patterns of other color channels. Furthermore, Daly teaches



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the use of dither patterns that are created from pseudo-random noise that is filtered.

This teaches away from the present invention, which creates dither patterns from feedback between color channels. Also, Daly (para. 53) teaches that independent spatiotemporal arrays are used for each color channel. The dither patterns of the present invention are not independent as indicated in the claims.”

In re, applicant's arguments have been fully considered but they are not persuasive. Based on the above fact that the claim limitations are taught by Daly '961, the examiner does not agree that Daly '961 teaches away from the instant invention. Indeed, “the use of dither patterns that are created from pseudo-random noise that is filtered” is also part of applicant’s disclosure (see Paragraphs 27 and 42 and 45). Finally, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a method whereby the dither patterns in the tiles are created with feedback related to pixel values in the dither patterns of other color channels) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The examiner also references the applicant to the claims rejection section below for the explanation on how the prior art references read on the amended claims.

For the above reasons, it is believed that the last Office Action dated 3/18/2009 was proper.

Therefore, the same ground of rejection is maintained for claims 14-18 and 20-22.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 22 is directed to a computer-readable medium comprising computer- executable instructions encoded in a computer program for creating a spatio-temporal array of dither patterns. However, the “computer-readable medium” is not defined in the specification at all. Without disclosing “computer-readable medium”, the examiner cannot interpret applicant’s claim in light of the disclosure. Thus, the examiner will give a broadest interpretation to "computer-readable medium". According to the field of the art, "computer-readable medium" can be a signal which can carry programming data/information transmitting in a network. For example, a user can download a printer driver from a server in a network to his or her computer, or a user can send a command to a networked printer for printing a print job. A signal is neither a “process”, nor a “machine”, nor “composite material” as stated in 35 U.S.C. 101 statutory categories. That is, a signal does not meet the 35 U.S.C. 101 statutory requirements. Thus, claim 22 is rejected under 35 U.S.C. 101.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 14, 15, 18, 21 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Daly (US 2003/0164961).

Regarding claim 14.

Daly' 961 discloses a method for creating a spatio-temporal array of dither patterns (**i.e. creating pseudo-random noise, or dither pattern from human visual system and quantization, Par. 26 and Fig. 8, Para. 35**), said method comprising:

a. establishing a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets (**Fig. 8 discloses spatio-temporal array of dither pattern tiles comprising multiple temporal framesets, Para. 58**), each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels (**Figs. 4 and 5, discloses color channels for said framesets, Paras. 40-54**); and

b. designating pixel values (**e.g. such frames 0-n in Frameset P each designating pixel values, Figs. 5 and 8**) in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels (**dither**

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**patterns are repeated continuously across the image, either horizontally or vertically, and the final noise profile is combined with color channels image data, Figs. 5 and 8, Paras. 55-63), wherein said designation is performed by a computing device comprising a processor and a memory (referring to Figs. 4 & 5, a display system for spatiotemporal dithering includes multiple process modules, i.e. image data is divided into RGB channels, and memory 30 for storing tiles; that is, there must be a processor, or a CPU controlling the process for performing spatiotemporal dithering; Pars. 54 & 55).**

Regarding claim 15, in accordance with claim 14.

Daly' 961 discloses that subsequently-designated pixel values are also dispersed from previously-designated pixel values in other temporal frames (**dither patterns are repeated continuously across the image, either horizontally or vertically, thus subsequently-designated pixel values are also dispersed from previously-designated pixel values in other temporal frames, Figs. 5 and 8, Paras. 55-63).**

Regarding claim 18, in accordance with claim 15.

Daly' 961 discloses pixel values designated in a last temporal frame are considered temporally adjacent to a first-designated frame wherein said pixel values in said first-designated frame have a dispersion effect on pixels designated in said last frame (**Fig. 8 discloses a embodiment that the last frame is temporally adjacent to the first frame and pixel values in said first-designated frame have a dispersion effect on pixels designated in said last frame because dither patterns are**

**repeated continuously across the image, either horizontally or vertically, Figs. 5 and 8, Paras. 55-63).**

Regarding claim 21.

Daly' 961 discloses system for creating a spatio-temporal array of dither patterns, said system (**System of Fig. 5**) comprising:

- a. a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets (**Fig. 8 discloses spatio-temporal array of dither pattern tiles comprising multiple temporal framesets, Para. 58**), each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels (**Figs. 4 and 5, discloses color channels for said framesets, Paras. 40-54**); and
- b. a designator (**e.g. visual system of Figs 3-5**) for designating pixel values (**e.g. such frames 0-n in Frameset P each designating pixel values, Figs. 5 and 8**) in said dither pattern tiles wherein said designator designates subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels (**dither patterns are repeated continuously across the image, either horizontally or vertically, and the final noise profile is combined with color channels image data, Figs. 5 and 8, Paras. 55-63**), and wherein said designator comprising a processor and a memory (referring to Figs. 4 & 5, a display system for spatiotemporal dithering includes multiple process modules, i.e. image data is divided into RGB channels, and memory 30 for storing tiles; that is, there must be a processor, or a CPU controlling the process for performing spatiotemporal dithering; Pars. 54 & 55).

Regarding claim 22.

Claim 22 recites identical features as claim 14, except claim 22 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 14 are also equally applicable to claim 22.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daly (US 2003/0164961) as applied to claim 15, and in view of Lippel (US 4,758,893).

Regarding claim 16, in accordance with claim 15.

Daly' 961 does not explicitly disclose that other temporal frames are weighted.

Lippel' 893 discloses wherein said dispersion from pixel values in other temporal frames is weighted wherein temporal frames more temporally distant from a pixel value have a lower dispersion than closer temporal frames (e.g. **Lippel discloses weighted temporal frames for subcycling cinematic dither and therefore, temporal instant of temporal frames can be controlled, col 10, lines 13-24**).

Having a method of Daly' 961 reference and then given the well-established teaching of Lippel' 893 reference, it would have been obvious to one having ordinary

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skill in the art at the time the invention was made to modify the method of Daly' 961 reference to include data conversion as taught by Lippel' 893 reference since doing so would be able to control priority of color channels in the method for creating a spatio-temporal array of the dither patterns and further the services provided could easily be established for one another with predictable results.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daly (US 2003/0164961) as applied to claim 15, and in view of Masuji et al (US 7,110,010).

Regarding claim 17, in accordance with claim 15.

Daly' 961 does not explicitly disclose that dispersion from pixel values in other color channels is weighted wherein other color channels have a lower dispersion than the color channel in which a pixel value is designated.

Masuji' 010 teaches that dispersion from pixel values in other color channels is weighted wherein other color channels have a lower dispersion than the color channel in which a pixel value is designated (**Masuji' 010 discloses that dither coefficient is weighted with color gradation level and dither coefficient is selected for dithering process, col 4, lines 23-39 and col 14, lines 17-33, and Fig. 17).**

Having a method of Daly' 961 reference and then given the well-established teaching of Masuji' 010 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Daly' 961 reference to include data conversion as taught by Masuji' 010 reference since doing so would enhance the method for creating a spatio-temporal array of the dither patterns by

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selecting different weight level of dither coefficient to optimize dither coefficient patterns and further the services provided could easily be established for one another with predictable results.

***Allowable Subject Matter***

11. Claim 20 is allowable. The primary reasons for allowance for claim 20 is the inclusion of the limitation of a method for creating a spatio-temporal array of dither patterns such (a). establishing an initial temporal offset frameset (ITOF), wherein said ITOF comprises a pre-determined pattern for each of a plurality of color channels; (b). establishing a first temporal frameset comprising dither pattern tiles for each of a plurality of color channels; (c). designating a first pixel value at a first point in a first dither pattern tile of said first temporal frameset, wherein said first point is dispersed from at least one pixel value in said pre-determined pattern, wherein said designating is performed by a computing device comprising a processor and a memory; (d). designating a second pixel value at a second point in said first dither pattern tile of said first temporal frameset, wherein said second point is placed at a location that is dispersed away from at least one pixel value in said first dither pattern tile, wherein said designating is performed by said computing device, and repeating steps of designating pixel value in said multiple dither pattern tiles until all frames of subsequent temporal framesets have been designated. It is these limitations either alone or combined as claimed that were taught, found, or suggested by prior art. The closest prior arts in the record are Lippel (US 4,758,893) and Gupta et al (Gupta) (US 6,851,783).



***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Steven Kau/  
Examiner, Art Unit 2625

/David K Moore/  
Supervisory Patent Examiner, Art Unit 2625